MATERIAL SAFETY DATA SHEET

1. SUBSTANCE AND SOURCE IDENTIFICATION

National Institute of Standards and Technology
Standard Reference Materials Program
100 Bureau Drive, Stop 2320
Gaithersburg, Maryland 20899-2320

SRM Number: 1647e
MSDS Number: 1647e
SRM Name: Priority Pollutant Polycyclic Aromatic Hydrocarbons (in Acetonitrile)

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Description: Standard Reference Material (SRM) 1647e consists of five 2 mL ampoules, each containing approximately 1.2 mL of an acetonitrile solution of 16 polycyclic aromatic hydrocarbons (PAHs).

Substance: Polycyclic Aromatic Hydrocarbons (PAHs) in Acetonitrile

2. COMPOSITION AND INFORMATION ON HAZARDOUS INGREDIENTS[1]

Component:	**Acetonitrile**
Other Designations:	**Acetonitrile** (cyanomethane; ethanenitrile; ethyl nitrile; methanecarbonitrile; methyl cyanide)
CAS Number:	75-05-8
EC Number (EINECS):	200-835-2
SRM Nominal Concentration (mass %):	> 99
EC Classification:	F, Xn, Xi
EC Risk (R No.):	11, 20, 21, 22, 36
EC Safety (S No.):	1, 2, 16, 36, 37

[1] Hazardous components 1 % or greater; Carcinogens 0.1 % or greater are listed in compliance with OSHA 29 CFR 1910.1200. For the list and actual concentration of hazardous PAHs less than 1 %, and carcinogen PAHs less than 0.1 % which are below the reportable limit, refer to the corresponding Certificate of Analysis.

3. HAZARDS IDENTIFICATION

NFPA Ratings (Scale 0–4): Health = 2 Fire = 3 Reactivity = 0

Major Health Hazards: Respiratory tract irritation. Eye irritation. Blood damage.

Physical Health Hazards: Flammable liquid and vapor. Vapor may cause flash fire.

Potential Health Effects

Inhalation: Inhalation (acute exposure) of acetonitrile with an exposure of 500 ppm for a short duration may cause irritation of the nose and throat. Exposure to 160 ppm for 4 hours may cause delayed flushing of the face, slight bronchial tightness, a burning sensation, wheezing, and laryngitis. High concentration exposure may cause delayed coughing, bloody sputum, nausea, chest pain, headache, dizziness, low blood pressure, rapid pulse, respiratory depression, weakness, confusion, convulsions, unconsciousness, coma, and death due to central nervous system depression.

Skin Contact: Skin contact with acetonitrile may cause irritation. Skin absorption may occur and result in systemic toxicity with symptoms similar to acute inhalation. Repeated or prolonged exposure may cause dermatitis.

Eye Contact: Eye contact with acetonitrile liquid and vapors may cause irritation and tearing. Repeated or prolonged exposure may cause conjunctivitis.

Ingestion: Ingestion may cause systemic toxicity as described in acute inhalation.

Listed as a Carcinogen/ Potential Carcinogen:

Acetonitrile

Yes	No	
____	X	In the National Toxicology Program (NTP) Report on Carcinogens.
____	X	In the International Agency for Research on Cancer (IARC) Monographs.
____	X	By the Occupational Safety and Health Administration (OSHA).

4. FIRST AID MEASURES

Inhalation: If adverse effects occur, remove to uncontaminated area. Give artificial respiration, if not breathing, by qualified personnel. Get immediate medical attention.

Skin Contact: Rinse affected area with copious amounts of water for at least 15 minutes while removing contaminated clothing. Get medical attention, if needed.

Eye Contact: Immediately flush eyes, including under the eyelids, with copious amounts of water for at least 15 minutes. Get immediate medical attention.

Ingestion: Get immediate medical attention. **DO NOT** induce vomiting. If vomiting occurs, keep head lower than hips to prevent aspiration. Give artificial respiration, if not breathing, by qualified personnel.

5. FIRE FIGHTING MEASURES

Fire and Explosion Hazards: Acetonitrile is a severe fire hazard. Vapors, which are heavier that air, may ignite from distant ignition sources. Flash backs may occur.

Extinguishing Media: Regular dry chemical. Carbon dioxide. Water. Alcohol resistant foam.

Fire Fighting: Move container from fire area if it can be done without risk. Use water spray to cool containers until well after the fire is out and to discharge vapors. Wear full protective clothing and NIOSH-approved self-contained breathing apparatus (SCBA).

Acetonitrile
Flash Point: 6 °C (43 °F)
Method Used: Open cup.

Autoignition Temp.: 524 °C (975 °F)

Flammability Class (OSHA): IB

Flammability Limits in Air
UPPER (Volume %): 16
LOWER (Volume %): 3

6. ACCIDENTAL RELEASE MEASURES

Occupational Release: Avoid heat, flames, sparks, and other sources of ignition. Reduce vapors with water spray. Collect small spilled material after absorbing with sand or other non-combustible material in an appropriate container for disposal. For large spills, stop leak if possible without personal risk. Notify Local Emergency Planning Committee and State Emergency Response Commission for release greater than or equal to the Release Quantity (RQ) (see Section 15, "Regulatory Information"). Keep out of water supplies and sewers.

Reportable Quantity (RQ): Acetonitrile is subject to RQ under Title III of SARA, which is greater than the unit quantity provided for SRM 1647e. See Section 15, "Regulatory Information".

Disposal: Refer to Section 13, "Disposal Considerations".

7. HANDLING AND STORAGE

Storage: Store and handle in accordance with all current regulations and standards. Store with flammable liquids. Keep separated from incompatible substances. Refer to SRM 1647e Certificate of Analysis for storage of SRM 1647e.

Safe Handling Precautions: See Section 8, "Exposure Controls and Personal Protection".

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Exposure Limits: **Acetonitrile**

OSHA (PEL): 70 mg/m^3 (40 ppm) TWA
ACGIH: 20 ppm TWA (skin)
NIOSH: 34 mg/m^3 (20 ppm) recommended TWA (10 h)
UK WEL: 68 mg/m^3 (40 ppm) TWA
UK WEL: 102 mg/m^3 (60 ppm) STEL

Ventilation: Use local exhaust ventilation system. Ventilation equipment should be explosion-resistant if explosive concentrations of material are present. Ensure compliance with applicable exposure limits.

Respirator: If necessary, refer to the "NIOSH Guide to the Selection and Use of Particulate Respirators Certified under 42 CFR 84" for selection and use of respirators with organic vapor cartridges certified by NIOSH.

Eye Protection: Wear safety goggles. An eye wash station should be readily available near areas of use.

Personal Protection: Wear appropriate protective clothing and chemically resistant gloves to prevent skin exposure.

9. PHYSICAL AND CHEMICAL PROPERTIES

Component:	**Acetonitrile**
Appearance and Odor:	Liquid. Colorless. Sweet odor.
Relative Molecular Mass:	41.05
Molecular Formula:	CH_3CN
Boiling Point:	82 °C (180 °F)
Freezing Point:	–46 °C (–51 °F)
Density (23 °C):	0.7789 g/cm^3
Water Solubility:	Soluble.
Solvent Solubility:	Soluble in alcohol, ether, acetone, benzene, methyl acetate, ethyl acetate, chloroform, carbon tetrachloride, ethylene chloride, acetamide solutions, and unsaturated hydrocarbons.
Odor Threshold:	40 ppm

10. STABILITY AND REACTIVITY

Stability: X Stable _____ Unstable

Stable at normal temperatures and pressure.

Conditions to Avoid: Avoid heat, flames, sparks, and other sources of ignition. Containers may rupture or explode if exposed to heat. Keep out of water supplies and sewers. Avoid contact and inhalation of material or combustion by-products.

Incompatible Materials: Acids. Metals. Bases. Oxidizing materials. Combustible materials. Reducing agents.

Fire/Explosion Information: See Section 5, "Fire Fighting Measures".

Hazardous Decomposition: Thermal decomposition can produce oxides of carbon, nitrogen oxides, and cyanide fumes.

Hazardous Polymerization: _____ Will Occur X Will Not Occur

11. TOXICOLOGICAL INFORMATION

Route of Entry: X Inhalation X Skin X Ingestion

Toxicity Data:

Acetonitrile
Man, Oral TD_{LO}: 64 mg/kg
Woman, Oral TD_{LO}: 500 mg/kg
Human, Inhalation TC_{LO}: 160 ppm (4 h)
Rat, Oral LD_{50}: 2 460 mg/kg

Tumorigenic, Reproductive, Mutagenic Data: Acetonitrile has been investigated as a tumorigenic, reproductive, and mutagenic effector.

Health Effects (Acute and Chronic): See Section 3, "Hazards Identification" for potential health effects.

12. ECOLOGICAL INFORMATION

Ecotoxicity Data: Highly toxic to aquatic life.

13. DISPOSAL CONSIDERATIONS

Waste Disposal: Dispose in accordance with all applicable federal, state, and local regulations. Acetonitrile is subject to disposal regulations, U.S. EPA 40 CFR 262, Hazardous Waste Number U003.

14. TRANSPORTATION INFORMATION

U.S. DOTand IATA: Acetonitrile; Excepted Quantity (1.2 mL × 5), UN1648; Hazard Class 3; Packing Group II.

15. REGULATORY INFORMATION

U.S. Regulations: CERCLA Sections 102a/103 (40 CFR 302.4): Acetonitrile: 2 272.7 kg (5 000 lbs) RQ.

SARA Title III Section 302 (40 CFR 355.30): Not regulated.

SARA Title III Section 304 (40 CFR 355.40): Not regulated.

SARA Title III Section 313 (40 CFR 372.65): Acetonitrile.

OSHA Process Safety (29 CFR 1910.119): Not regulated.

SARA Title III Sections 311/312 Hazardous Categories (40 CFR 370.21):

ACUTE:	Yes.
CHRONIC:	No.
FIRE:	Yes.
REACTIVE:	No.
SUDDEN RELEASE:	No.

State Regulations: California Proposition 65: Not regulated.

CANADIAN Regulations
WHMIS Classification: Not determined.

EUROPEAN Regulations
EC Classification (assigned):

F	Highly Flammable.
Xn	Harmful.
Xi	Irritant.

EC Risk Phrases:

R 11	Highly flammable.
R 20/21/22	Harmful by inhalation, in contact with skin, and if swallowed.
R 36	Irritating to eyes.

EC Safety Phrases:	S 1/2	Keep locked up and out of reach of children.
	S 16	Keep away from sources of ignition.
	S 36/37	Wear suitable protective clothing and gloves.
National Inventory Status		
U.S. Inventory (TSCA):	Acetonitrile:	Listed on inventory.
TSCA 12(b) Export Notification:	Acetonitrile:	CAS No: 75-05-8 Section 4

16. OTHER INFORMATION

Sources: MDL Information Systems, Inc., MSDS *Acetonitrile*, 15 September 2005.

Disclaimer: Physical and chemical data contained in this MSDS are provided only for use as a guide in assessing the hazardous nature of the material. The MSDS was prepared carefully, using current references; however, NIST does not certify the data in the MSDS. The certified values for this material are given in the NIST Certificate of Analysis.